

# Early functional, esthetic, and psychological rehabilitation of preschool child with nonsyndromic oligodontia and anodontia in mixed dentition stage through conservative systematic approach: A case report with 5-year follow-up

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## Abstract

Missing teeth are a common developmental abnormality in humans. It may manifest as absence of varying numbers of primary and/or secondary teeth. Early treatment and follow-up are the key to successful rehabilitation of young patients with congenitally missing teeth. It is critical that oral rehabilitation is started early to maintain and correct the oral functions. Mucosa borne removable prostheses are the commonly selected treatment options for the young patients who present with oligodontia or anodontia. This clinical report describes esthetic, functional, and psychological rehabilitation of a young boy with severe oligodontia in maxillary arch and anodontia in mandibular arch. The individualized conservative graded approach in prosthetic rehabilitation with removable acrylic prosthesis helped to achieve esthetics, functionality, and psychological benefits.

**Keywords:** Anodontia, ectodermal dysplasia, hypodontia, oligodontia, prosthodontic rehabilitation

## Introduction

The congenital absence of teeth results from the aplasia of the dental lamina due to genetic or environmental factors. It can affect both the primary and permanent dentition. Hypodontia presents as missing single tooth to more than 6 teeth (oligodontia) excluding third molars and the complete absence of teeth (anodontia).<sup>[1]</sup> Missing teeth are usually seen as isolated nonsyndromic trait or as a part of a syndrome.<sup>[2]</sup>

Anodontia manifests itself as lack of alveolar ridge development, as a result, the vertical dimension of lower face is reduced and the vermilion border of lips disappears imparting an aged appearance.<sup>[3]</sup> Severe hypodontia at an early age affects the overall development of the child and

hence demands early oral rehabilitation.<sup>[4]</sup> This clinical report discusses the rehabilitation of nonsyndromic anodontia and oligodontia from preschool age with 5-year follow-up.

## Case Report

A 6-year-old boy presented with noneruption of teeth. His parents seemed to be normal and they denied any history of similar condition in their respective families. The parents revealed that the child was progressing at an average pace in school. The child had sparse, fine, blond hair, especially at the temple area and eyebrows. The lower facial height decreased due to an over closed profile, making the lips appear prominent. Examination of nails revealed no abnormality. His behavior in the dental office was age appropriate. An intraoral examination revealed complete anodontia in the mandibular arch and alveolar ridges appeared considerably shallow [Figure 1]. Hypodontia was observed in the maxillary arch with only maxillary left deciduous first molar and bilateral deciduous second molars present. Buccal mucosa, palate, and floor of the mouth were normal. Vertical dimension was considerably lost. Radiographic evaluation revealed that the tooth germs of only 11 and 21 were present in the maxillary arch and there were no evident tooth germs of deciduous and permanent teeth in

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the mandibular arch [Figure 2]. His nails were normal [Figure 3]. Child was referred to the Department of Pediatrics for assessment. A diagnosis of nonsyndromic oligodontia and anodontia was made. Family pedigree was not studied.

Oral rehabilitation, with removable prosthesis, mandibular complete denture, and maxillary removable partial dentures, was planned with frequent follow-up and multiple prosthesis to accommodate age changes. The first visit was purely introductory. The parents were explained the plan of treatment. The procedure of denture fabrication closely paralleled that for the conventional denture technique but with a few notable exceptions. Initial impressions were made in modeling compound (DPI Pinnacle, Mumbai, India). Custom acrylic resin trays were fabricated from the resultant casts. A wax spacer was adapted over the nonstress bearing areas. The maxillary and mandibular trays verified for accuracy and were border-molded with green stick compound (DPI Pinnacle Tracing Sticks, Mumbai, India). The final wash impressions were obtained with zinc oxide eugenol (DPI Impression Paste, Mumbai, India). Temporary record bases were fabricated using cold cure acrylic resin followed by wax occlusion rims over them. The pattern denture base was verified intraorally for accuracy and jaw relations were recorded. The mandibular rest position was estimated extraorally, and the upper lip was used as a guide for the location of the incisal edges of the

upper anterior teeth. The orientation of occlusal plane was kept lower than the level of the mandibular foramen unlike the occlusal plane in the adult patient. Teeth arrangement was done following conventional technique. No attempt was made to balance the occlusion. During the try-in appointment, it was observed that the part of incisal edge of the maxillary right permanent central incisor had erupted above the gingival margin and was interfering with the retention of the maxillary temporary denture base, as it had not pierced through the gingiva till the secondary impression was made. A window was created just palatal to maxillary right deciduous incisors and canine to accommodate the erupting permanent tooth [Figure 4]. Furthermore, the right maxillary anterior had to be placed more labially for the same reason. Try-in was done and the child's joy to see his artificial teeth was very obvious. Dentures were processed with heat-cured acrylic resin following compression molding technique and polished. The maxillary removable partial denture retention was assisted with clasps on deciduous second molars. At the insertion appointment, the complete incisal edge of the maxillary permanent right central incisor had erupted in the oral cavity, so further widening of the window created to accommodate the erupting tooth was done. The maxillary partial and mandibular complete dentures were inserted [Figures 5 and 6]. Instructions about



**Figure 1:** Intraoral view showing thin alveolar ridge



**Figure 3:** Patient's hands with normal nails



**Figure 2:** Orthopantomogram showing developing and developed teeth



**Figure 4:** Window palatal to the maxillary central incisor to accommodate erupting tooth

oral hygiene were given, and the parents were asked to supervise the child's oral hygiene. The patient was advised to maintain a soft diet for the first few days and to remove the dentures at night and during the sports activities. Recall appointments were scheduled for 24 h and then weekly.

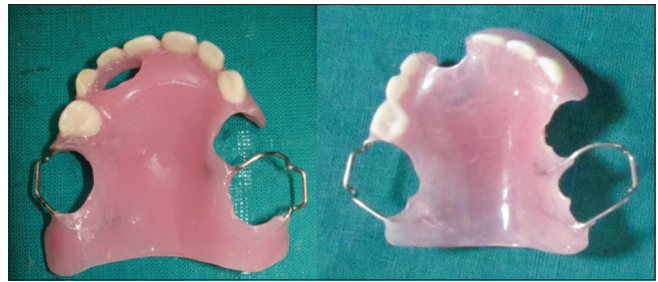
The parents reported no problem in retention of the prosthesis. Initially, the patient had some difficulty in accepting the dentures and was unable to keep them in the mouth for long periods. However, shortly, he was fully adjusted to using the dentures. Patient was on a monthly recall schedule for continuous monitoring to track the eruption of 11 and observe the status of 21 and to allow the necessary adjustments of his denture to accommodate the erupting permanent tooth/teeth. The maxillary permanent right central incisor erupted completely through the window in the prosthesis. After 2 years, the patient reported difficulty in wearing the dentures. The dentures were replaced with the new prosthesis following the technique as earlier accommodating the erupted permanent right incisor and the growth changes in the jaws [Figure 7]. No change in the status of the unerupted 21 was observed.

At the beginning of therapy, the patient was quiet and withdrawn. He became communicative and his speech skills improved after the insertion of dentures. Development of a good psychological self-image was achieved through the esthetic improvement. Facial profile and expression improved with the prosthesis. The cosmetic effect alone seemed to transform the patient into a socially acceptable individual. Future treatment will include relining, rebasing, or remaking of the dentures to accommodate growth and development and definitive restorations at an appropriate age.

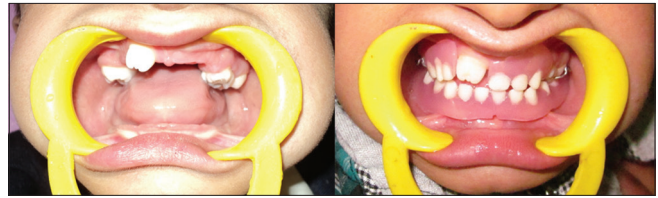
## Discussion

Hypodontia is well reported in the literature; however, there is scanty literature reporting anodontia of deciduous and permanent teeth. Oral rehabilitation of the young patients with missing teeth depends on the age, number, condition of present teeth, and the state of growth of the patient. It includes prosthesis fabrication, maintaining the remaining dentition, accommodation of growth, and development and behavior management for long-term follow-up.

Hypodontia adversely affects physiologically as the absence of teeth is accompanied by vestigial ridge; therefore, restoring function and appearance are more challenging than usual.<sup>[5]</sup> It affects psychologically in the childhood as young patients realize themselves different from other children, hence psychological boost up is one of the primary objectives of the treatment plan.<sup>[6]</sup> The need for the prosthesis is important during the preschool years and continues into the adulthood. Early rehabilitation is critical considering that the establishment of lifelong dietary patterns occurs during childhood,<sup>[7]</sup> and absence of several primary teeth may result



**Figure 5:** Maxillary dentures with perforation and gap for the right central incisor



**Figure 6:** Preoperative view and postoperative view with dentures *in situ*



**Figure 7:** Extraoral view: Preoperative, with denture and with right permanent central incisor accommodated in the denture

in speech abnormalities as learning and reinforcement of articulation keeps on until 8 years of age.<sup>[5,6]</sup> Initial prosthesis should be delivered at preschool age<sup>[8]</sup> and can be as early as 3 years of age.<sup>[9,10]</sup> Periodic recalls of young patients are important because prosthesis modification or replacement is needed in view of continuing growth and development. The prosthesis delivery at a young age in the presented case helped in adding to the psychological and physical health both.<sup>[11]</sup>

The success of treatment is dependent on patient–parent cooperation and initial molding can be achieved by operant conditioning. The desire to look like others who have teeth can be a motivator for the young child. In the presented case, the child recognized the esthetic handicap and was motivated to cooperate. Along with the patient, involvement of parents is equally desired and it is recommended that the patient and the parents should be briefed on changes in advance and be informed that a more permanent treatment will be rendered on growth completion. Frequent follow-ups with motivating interactions with the child helped to draw required cooperation.



Anodontia of deciduous and permanent dentition in mandibular arch, as observed in the presented case, is rare. Hypodontia presents with varied manifestations. It may even be associated opposing numeric anomaly of supernumerary tooth.<sup>[12]</sup> The scarcity of evidence in the literature hampers the decision-making in such cases. The mucosa supported removable prosthesis serve as a simple, convenient, and conservative option that permits changes those are anticipated but not defined. It also allows quick changes in the design of the restoration for customized care in accordance with the growth pace and status of the existing erupted and nonerupted teeth though patient cooperation remains desirable with any removable prosthesis. The successful outcome of esthetics and functions of mastication and speech was achieved.

## Conclusion

Early prosthetic treatment is of great value to the patients with congenitally missing teeth from functional and psychosocial standpoint. It must be remembered that any prosthesis made for a young patient should be closely monitored for needed adjustments or for a replacement prosthesis made necessary by growth and development. A frequent recall schedule is advised until skeletal growth is complete and definitive restoration is planned thereafter. The physiological and psychological conditions of both the parent and the patient improved notably with simple and conservative prosthetic rehabilitation.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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